Auto industry faces muddy field of electric dreams

The electric-car industry is at an odd juncture. While upstart Tesla struggles to meet output targets and consumers are lukewarm about the technology, the rest of the sector faces jaw-dropping investment in battery making to keep its e-vehicle promises.

Auto makers will meet the multibillion-dollar challenge though it won't be without a squeeze in short-to-medium term profitability. Leading original-equipment manufacturers (OEMs) are planning a range of battery-electric vehicles (BEVs) or hybrids in a massive roll-out between 2020 and 2025. The main drivers are: Tougher environmental rules notably in Europe and China, government subsidies, slowly improving consumer acceptance and more extensive battery-charging infrastructure.

The OEMs have deep pockets. Take Volkswagen, with yearly capital expenditure regularly exceeding EUR10bn on revenue of more than EUR210bn. Still, the cost of ramping up BEV output will be huge.

For VW to meet a target of up to 3 million BEVs by 2025, the auto maker needs the equivalent of four lithium-ion battery-making plants with the capacity of the 35 gigawatt-hour factory that Tesla is building in Nevada at a cost of up to $5 billion.

Working out exactly how much the OEMs have to invest is near impossible given uncertainty over future sales, the mix of differently sized battery packs across BEV line-ups, and the changing costs and energy density of batteries.

Easier to discern is the qualitative shift in the nature and financial impact of the industry's technology spending. Typically, auto makers have focused on incremental improvements in engine efficiency to meet tightening standards on carbon-dioxide vehicle emissions. More economical vehicles also please consumers. Recurrent sales generate revenues to cover costs.

The catch with battery technology is that the OEMs have little or no revenue from sales of existing BEVs to help defray extra development costs and contribute to covering other expenses.

How quickly will BEV revenues turn up? Production delays in Tesla's Model 3 sedan show that designing a new BEV is one thing. Making them in large volumes is another. Other OEMs are no strangers to mass production, but customers, even well-heeled ones, remain price sensitive, as Tesla found with a slump in sales in Hong Kong this year after electric-car subsidies were scrapped. It's a bumpy road to the industry's electric future.

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Technological pressures to challenge margins

Automotive outlook 2018: stable

We see the outlook for the automotive sector as broadly stable. For automakers, we expect limited support on revenues and earnings from light-vehicle sales growth given our base case for 2018E of light-vehicle sales growth of less than 1%. Selected auto suppliers should continue to benefit from rising fitment rates and increased content per vehicle, with organic sales growth above the projected numbers for light-vehicle production.

For 2018E we expect global light-vehicle (passenger car and light truck) unit sales growth to moderate to levels of about 1%. A comparison with the expected growth rate of about 2% for 2017 indicates a levelling-off of demand following a decade of above-average growth, with growth rates averaging about 4% since 2007.

In our view, the decelerating growth rate is primarily driven by a slowdown of growth or decline in demand for light vehicles in the large volume markets of China, the United States and Europe, which is not being counterbalanced by the positive momentum we expect for smaller markets such as the Middle East, South America and South Asia.

China

China to remain key market

We expect this key growth engine for global light-vehicle sales in the past years to show further moderation of demand in 2018E. This development does not come as a surprise and is broadly in line with the viewpoint of most automakers and auto suppliers that a 'new normal' growth rate for China (i.e. low single-digit volume growth) is a reasonable expectation going forward. Over the past two years, volume developments in China have been influenced by tax incentives and government intervention that have led to some pre-buy effects. In 2016, customers brought forward purchases in anticipation of the tax rate on vehicles with a displacement of up to 1.6 litres being raised from 2.5% to 7.5% at the beginning of 2017. The pre-buy effect in 2016 could already be observed in the first half 2017 when the Chinese light-vehicle growth rate dropped to about 3%.

China broadly stable in 2018

General fundamental support in China, including low car penetration, economic growth, and the increasing availability of car financing for retail customers, principally remains supportive for the automotive market. Fundamentals point to stable market development in 2018E, a year that, in all likelihood, would be still influenced by the pre-buy effect for small passenger cars in 2016. Overall, we see the Chinese market for light vehicles almost unchanged in 2018E versus 2017.

North America/United States

Despite high consumer confidence, a favourable labour market and manufacturer incentive programmes, the North American market was down by about 2% in the first half of 2017 compared with a strong prior-year period. Over the past years (2010-2016), volume growth in the United States was greatly boosted by a combination of low interest rates, availability of credit and replacement demand. The long-standing preference for light trucks (SUVs, pick-up trucks) has continued thanks to low oil and gasoline prices. Demand for sedans and compact cars already declined substantially in the first half 2017.

US market down by 4-5% in 2018

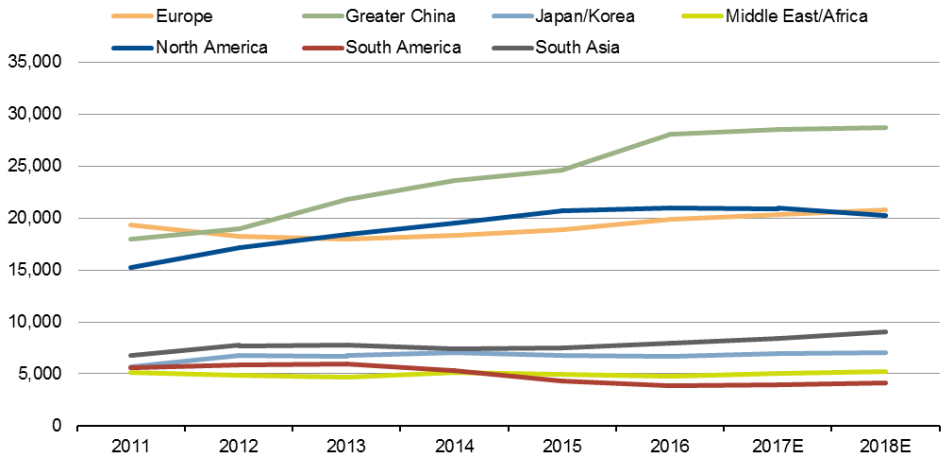
For the important US market, we expect a flat unit sales development in 2017 and a market decline of 4-5% in 2018E. This expectation is in line with our earlier projections and conviction that the US market has reached its cyclical peak. In 2017, unit volume sales in the United States will be supported by replacement demand for vehicles that have been destroyed by hurricanes Harvey, Irma and Maria. Without this hurricane-related effect, which we estimate should support sales of around 400,000-500,000 vehicles until the end of 2017, the US market would very likely have shown negative development already. Going forward, we see the following effects as having negative implications for volume development in 2018E:

Risk associated with gradually rising interest rates. The supportive financing conditions of the past few years (low auto loan interest rates, an appetite for risk on the part of car financial companies) are gradually coming to an end. More limited availability of consumer/auto credit, including tighter underwriting by car financing companies, combined with rising interest rates, should reduce the affordability of new car purchases.

Vehicles come off lease in 2018

Vehicles coming off lease. The US market has enjoyed high single-digit growth rates in the years 2013-2015, which peaked at a volume of 17.6m light vehicles in 2016. Consequently, and considering the typical duration of auto leases of three to four years, we see a significantly higher number of passenger cars and light trucks coming off lease in 2018-2019. We estimate an 'excess' supply of around 500,000 vehicles off lease in each 2018 and 2019, possibly dragging down used-car prices. This may, in turn, dampen demand for new light vehicles, especially in the absence of higher purchase incentives from carmakers.

Figure 1: Light-vehicle unit sales forecast by region



Source: Scope Ratings estimates, IHS

Europe

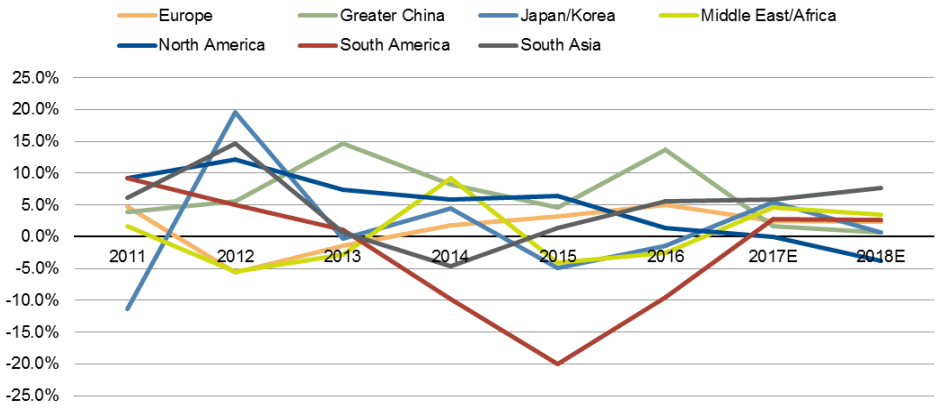
Western Europe to plateau in 2018

Following the strong revival of demand in recent years, the markets in Europe should continue to grow slightly in 2017. The ongoing economic recovery, favourable interest rates, and replacement demand in some countries (particularly in Italy, Spain and eastern Europe) have supported the European market since 2014. At the same time, the robust economic developments in key European markets (France and Germany), including low unemployment, have boosted unit volume sales beyond the unit volume sold during the financial crisis (which, at that time, was positively supported by scrappage schemes). For western Europe, we expect the markets to plateau at about 16m light vehicles in 2018E with some support from diesel-scrappage schemes offered by car manufacturers (replacement of older diesel cars with new diesel cars or petrol engines).

CEE: key volume driver in 2018

Tight labour markets, rising wages, and supportive fiscal policies (tax cuts) have buoyed up car sales in Central and Eastern Europe (CEE). Russia still accounts for about one-third of light-vehicles sales in this region. Thanks to rising consumption, government incentives for car park renewal, low interest rates and the Russian economy rebound, we see the CEE region as one of the key volume drivers for 2018E. Overall, we forecast a growth rate for Europe of slightly above 2% in 2018E.

Figure 2: Light-vehicle unit sales growth forecast by region



Source: Scope Ratings estimates, IHS

Automotive electrification

China: largest electric vehicle market

Sales of battery-electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) reached records in 2016 with over 750,000 electrified vehicles sold worldwide.

China has become the largest electric car market globally, accounting for almost half of electrified vehicles registered in 2016. Global unit volumes for electrified vehicles are, however, still at fairly low levels and represent less than 1% of global light-vehicle sales (2016). Consequently, there are still no implications for the credit quality of car manufacturers.

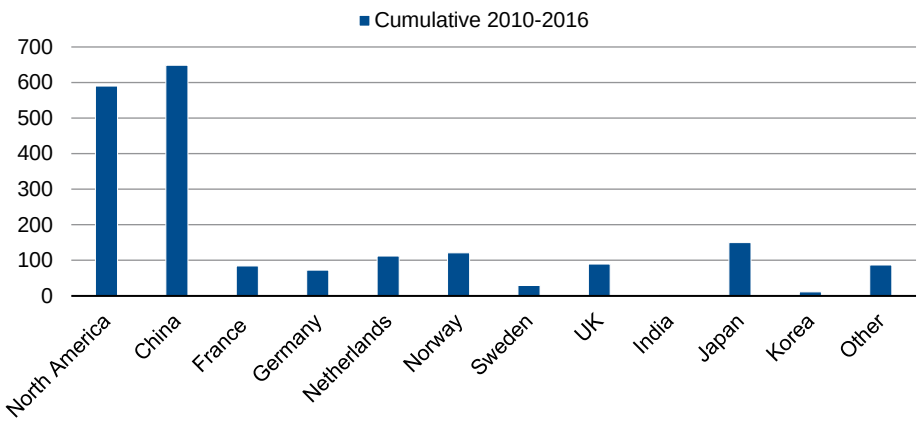
Subsidies to boost demand

Going forward, we see an increasing uptake of electrified vehicles driven by financial incentives, regulatory mandates, higher consumer acceptance and an improved charging infrastructure.

Electric vehicle targets in China

A key volume driver in this regard will once again be the Chinese market (as was the case for unit volume sales of combustion engines over the past decade). China has a regulation that requires automakers to sell a minimum number of 'new-energy vehicles' (these include BEVs and PHEVs) per year from 2019. In September 2017, China's Ministry of Industry and Information Technology set out a policy that new-energy vehicles should reach 10% of volumes sold in 2019 followed by 12% in 2020. Failure to achieve these targets could result in fines for automakers but players in the industry can buy credits from competitors that exceed targets for the sale of electrified vehicles. Going by the numbers for 2017, a 10% share would represent more than 2.5m new-energy vehicles sold in China in 2019. This compares with about 2.0m electric cars (BEVs and PHEVs) sold worldwide over the period from 2010-2016.

Figure 3: Electric cars (BEVs and PHEVs) – cumulative new registrations by country



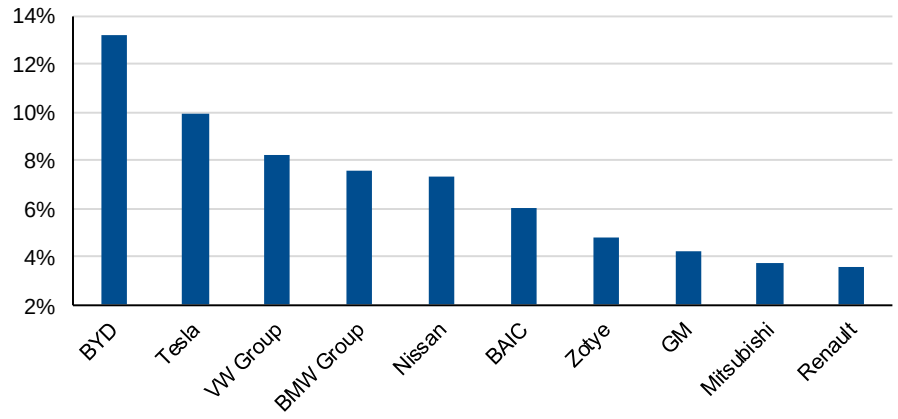
Source: International Energy Agency; BEV = battery electric vehicle; PHEV = Plug-in hybrid electric vehicle

Regulatory hurdles achievable

The regulatory targets for new-energy vehicles in China appear ambitious but achievable for original equipment manufacturers (OEMs) in our view. For instance, Volkswagen has announced a target unit volume for electrified vehicles in China of around 400,000 units by 2020.

Regulatory targets such as those in China and the continued need of car OEMs to reduce CO2 fleet emissions may change the automotive landscape even though it is far from certain that the current leaders in electrified vehicles will remain so in the longer term.

Figure 4: BEVs – market shares of OEMs



Source: ev-volumes.com;BEV = Battery-electric vehicle; OEM = Original Equipment Manufacturer

Electric vehicles about 25% in 2025

OEMs have laid out different product and model strategies for the coming years (see Figure 30 below). Projections and plans by different OEMs point towards a share of about 25% of battery-powered vehicles by 2025. The largest share of vehicles on the way to achieving those targets will very likely be plug-in hybrids or hybrid vehicles, with only a gradually rising share of BEVs. The reasons for a slower take-up of pure BEVs are primarily:

Higher production/component costs: A key value-added component for BEVs is the cost of battery cells. Prices for battery cells are currently at EUR 200/KWh and only a further price decline for battery packs would reduce production costs for BEVs. Further

investments by battery cell producers and learning-curve effects should lead to price falls for battery cells to levels of about EUR 100/KWh over the coming years.

Figure 5: Selected OEM announcements on electric car models

BMW	25 electrified vehicles by 2025 (announced at International Motor Show, IAA, in 2017)
Daimler	More than 10 pure electric vehicles by 2022; share of BEVs in a range of 15%-25% of unit volume sold by 2025
Volkswagen	Target of 80 electrified vehicles by 2025. 50 BEVs and 30 plug-in hybrids. Announced with Volkswagen 'RoadmapE' strategy in September 2017; share of BEVs in a range of 20%-25% of unit volume sold by 2025 (about 2m-3m electrified cars)
Jaguar and Land Rover	Production of only BEVs or hybrid electric vehicles from 2020
Volvo Cars	Production of only BEVs or hybrid electric vehicles from 2019
Ford	13 new electric vehicle models by 2020
Tesla	1m BEVs sold in 2020, 0.5m BEVs sold in 2018

Capacity limitations and capacity expansion for battery cell production

The electric car models announced by different OEMs implicitly assume sufficient availability of lithium-ion battery (cell) capacity over the coming years. As an example: if Volkswagen was to meet its target of up to 3m BEVs (50 new BEV models by 2025), this would require a lithium-ion battery capacity of over 150 GWh, the equivalent of four Tesla Gigafactories (Tesla's Gigafactory, a JV of Tesla and Panasonic, has a targeted capacity of 35 GWh per year). In view of the current production of battery cells, we believe substantial investment will be required in order to meet this increasing demand.

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